

ABSTRACT OF THE DISCLOSURE

A stimulation electrode is provided having an electrically conducting electrode base member which is partially covered with an electrically insulating ceramic layer. The ceramic layer is formed of an oxide and/or an oxynitride of at least one metal of the group of titanium, niobium, tantalum, zirconium, aluminum and silicon. Various methods are provided for production of the stimulation electrode, including methods in which the ceramic layer is formed *in situ* by a thermal, chemical or electrochemical oxidation or oxynitridation process. The stimulation electrode may be used as a cardiac pacemaker electrode, a neuro-stimulation electrode, or another human implant.